

CLAIMS

WHAT IS CLAIMED IS:

1. A phase lock oscillator comprising:

an oscillating section having a phase-locked loop including a reactive element, for

5 generating a signal with a predetermined frequency; and

a limit discriminating section for varying a reactance of said reactive element when discriminating an instant preceding an instant which is a limit in said phase-locked loop being capable of maintaining its lock state.

2. A phase lock oscillator having a voltage controlled oscillator whose oscillation
10 frequency varies according to a control voltage, wherein said voltage controlled oscillator comprises:

a resonator;

a limit discriminating section for detecting that said control voltage reaches a predetermined value; and

15 a controlling part for varying a resonance frequency of said resonator at the time of the detection by said limit discriminating section.

3. A communication equipment comprising a transmitting part for transmitting transmission information by using an output signal of a phase lock oscillator which has a phase-locked loop including a reactive element and whose oscillation frequency varies
20 according to an input signal, wherein said phase lock oscillator comprises:

a limit discriminating section for discriminating an instant preceding an instant which is a limit in said phase-locked loop being capable of maintaining its lock state; and

a controlling part for starting a processing of varying a reactance of said reactive element at a first instant succeeding said preceding instant, when said preceding instant is

25 detected by said limit discriminating section, in which

said controlling part controls said transmitting part to transmit said transmission information at a higher transmission rate than a transmission rate applied immediately before said preceding instant, the transmission being performed: during a specified period from an instant at which said preceding instant is detected, to said first instant; or after a
5 predetermined time elapses from said first instant.

4. The communication equipment according to claim 3, wherein

said controlling part controls said transmitting part to transmit a signal for notifying an opponent communication equipment of a change in transmission rate before a beginning of said transmission at said higher transmission rate.

10 5. A communication equipment comprising a receiving part for receiving a reception signal by using an output signal of a phase lock oscillator which has a phase-locked loop including a reactive element and whose oscillation frequency varies according to an input signal, wherein said phase lock oscillator comprises:

a limit discriminating section for discriminating an instant preceding an instant

15 which is a limit in said phase-locked loop being capable of maintaining its lock state; and

a controlling part for starting a processing of varying a reactance of said reactive element at a first instant succeeding said preceding instant, when said preceding instant is detected by said limit discriminating section, in which

said controlling part controls said receiving part to perform a receiving processing of
20 said reception signal at a higher transmission rate than a transmission rate applied immediately before said preceding instant, the reception being performed: during a specified period from an instant at which said preceding instant is detected, to said first instant; or after a predetermined time elapses from said first instant.

6. The communication equipment according to claim 5, further comprising

25 a transmitting part for transmitting transmission information by using an output

signal of said phase lock oscillator, and wherein

said controlling part controls said transmitting part to transmit a signal for notifying an opponent communication equipment of a change in said transmission rate, the transmission being performed during a specified period from an instant at which said
5 preceding instant is detected, to an instant before said first instant.

7. The communication equipment according to claim 3, wherein

said transmitting part transmits transmission information at a power at the time of said transmission at said higher transmission rate, the power being larger than a power applied at transmission immediately before said preceding instant.

10 8. The communication equipment according to claim 4, further comprising

a response receiving section for receiving a response transmitted from a receiving end which receives a notification transmitted from said transmitting part, the response being transmitted in response to the notification, and wherein

said controlling part withholds a processing of varying said reactance of said reactive
15 element until an instant at which said response is received.

9. The communication equipment according to claim 3, wherein

said phase lock oscillator has a lock-up time t which is equal to or shorter than a product of:

a difference between a ratio r of maximum to minimum values of a transmission rate

20 applicable to both or one of transmitting and receiving, and '1'; and

a length T of a period which is within said specified period and where a transmission rate is set to a value higher than the minimum value.

10. The communication equipment according to claim 5, wherein

said phase lock oscillator has a lock-up time t which is equal to or shorter than a

25 product of:

a difference between a ratio r of maximum to minimum values of a transmission rate applicable to both or one of transmitting and receiving, and '1'; and

a length T of a period which is within said specified period and where a transmission rate is set to a value higher than the minimum value.

5 11. The communication equipment according to claim 3, wherein

a ratio r of maximum to minimum values of a transmission rate applicable to both or one of transmitting and receiving is set at a value equal to or larger than a sum of '1' and a ratio of a lock-up time t of said phase lock oscillator to a length T of a period which is within said specified period and where a transmission rate is set to a value higher than the minimum value.

12. The communication equipment according to claim 5, wherein

a ratio r of maximum to minimum values of a transmission rate applicable to both or one of transmitting and receiving is set at a value equal to or larger than a sum of '1' and a ratio of a lock-up time t of said phase lock oscillator to a length T of a period which is within said specified period and where a transmission rate is set to a value higher than the minimum value.

13. The communication equipment according to claim 3, wherein

a length T of a period is set to a value equal to or larger than a ratio of a lock-up time t of said phase lock oscillator to a difference between a ratio r of maximum to minimum values of a transmission rate and '1', the period being a period which is within said specified period and where the transmission rate to be applied to both or one of transmitting and receiving is set at a value higher than the minimum value of the transmission rate.

14. The communication equipment according to claim 5, wherein

a length T of a period is set to a value equal to or larger than a ratio of a lock-up time t of said phase lock oscillator to a difference between a ratio r of maximum to minimum

values of a transmission rate and '1', the period being a period which is within said specified period and where the transmission rate to be applied to both or one of transmitting and receiving is set at a value higher than the minimum value of the transmission rate.

15. The communication equipment according to claim 3, wherein:

5 said transmission information is transmitted/received via a sequence of multiplexed slots; and

said transmission rate is set individually for each slot.

16. The communication equipment according to claim 5, wherein:

said transmission information is transmitted/received via a sequence of multiplexed

10 slots; and

said transmission rate is set individually for each slot.

17. The communication equipment according to claim 3, wherein

a signal generated by said phase lock oscillator is used as one of a carrier signal for transmission and a local-frequency signal for generation of the carrier signal.

15 18. The communication equipment according to claim 5, wherein

a signal generated by said phase lock oscillator is used as one of a carrier signal for transmission and a local-frequency signal for generation of the carrier signal.

19. The communication equipment according to claim 5, wherein

a signal generated by said phase lock oscillator is used as a local-frequency signal

20 employed for heterodyne detection performed in a receiving process.